

Maricopa County

Vector-Borne and Zoonotic Diseases Maricopa County 2002

March 2003

- **WNV** spreads unchecked across the U.S.
- **Anthrax** letters kill five persons.
- New surveillance procedures for **malaria** in 2002.
- Record year for **rabies** reports

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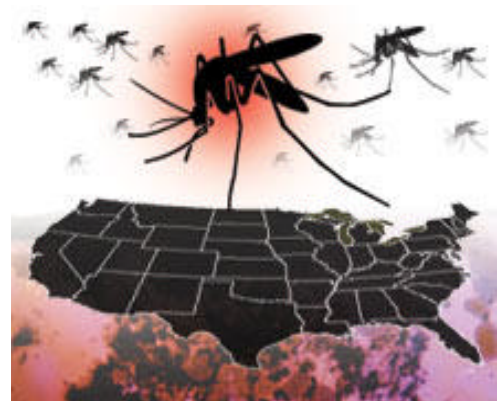
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In the News: West Nile Virus

Since its arrival in the U.S. in 1999 this mosquito-borne virus has become the most wide spread disease of its genre. Arizona is one of only four U.S. states that have not experienced WNV activity within its borders. The epidemic of 2002 claimed 263 lives and is responsible for illness in over 4000 persons in the U.S. As the virus moved rapidly across the country, Maricopa County health officials prepared by increasing surveillance for WNV in mosquito pools, equines, dead-birds and sentinel chicken flocks. Informational fliers were distributed to improve public awareness of mosquito control and reduction methods. Maricopa County epidemiologists investigated selected aseptic meningitis cases, each reported case of encephalitis and performed triage for WNV testing requests and related inquiries from local healthcare providers or the public. The period of enhanced surveillance (May-November) resulted in more than 60 case investigations and nearly 50 triage consultations. Two humans and one equine tested positive for WNV; investigations

revealed each infection was transmitted out of state.

Plans are currently underway to establish a comprehensive WNV surveillance and mosquito control campaign for the 2003 season. Early detection of WNV activity through animal surveillance will prompt targeted mosquito abatements. Program goals are to limit the human impact of WNV in Maricopa County.



In the News: Anthrax



The October 2001 bioterrorism-related anthrax letters resulted in 22 anthrax infections and five deaths in six states and the District of Columbia. The outbreak marked the first inhalational anthrax case reports in the U.S. since 1976.

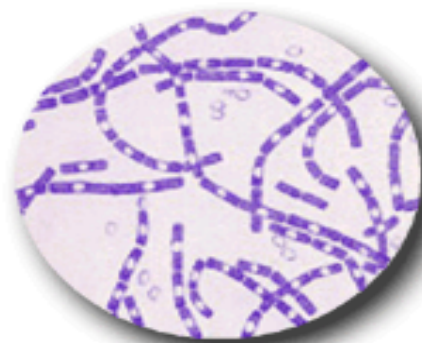
The local anthrax response is coordinated by the Arizona Department of Public Safety, Arizona Department of Health Services and the Federal Bureau of Investigation with the assistance of local health departments.

Anthrax: continued

All calls reporting a suspicious powdery substance are treated as a legitimate threat and immediate measures to contain the substance, limit exposures and procure laboratory specimens are taken by local law enforcement. All laboratory testing is done at the Arizona State Health Laboratory, the only Arizona facility authorized to perform bioterrorism-related anthrax specimen analysis.

Since the anthrax letters of 2001 418 such cases have been investigated in Maricopa County. Items tested included many letters and envelopes, money, various bags filled with powder, tissue and toilet paper rolls. None of the samples has tested positive for anthrax.

In 2002, 83 suspected anthrax-laden objects were reported.



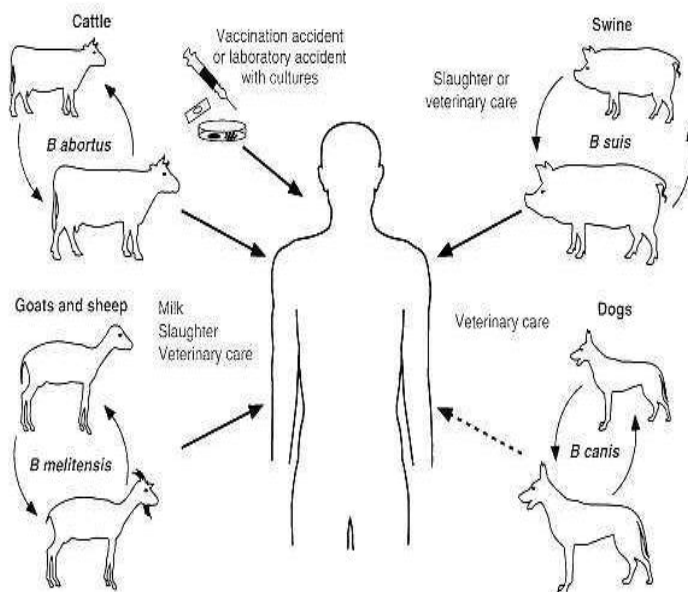
Hanta Virus

Historically, Arizona was one of the first areas of the U.S. in which Hanta virus was identified in the 1993 outbreak involving the 4 Corners region. Although the virus is endemic in rural and semi-rural regions of Arizona only 37 cases have occurred statewide, 6 in Maricopa County. In 2002 three cases of Hantavirus Pulmonary Syndrome (HPS) were identified in Maricopa County. All patients survived. The first was known to have been exposed to the virus in Texas while visiting the home of a family member who had recently died of HPS.

The area of exposure for the second case is unclear but presumed to be Maricopa County. The third case lived in a local rented home having extensive rodent infestation. The owner of the residence has been issued a cease and desist order to prevent renting of the property until cleanup is completed. For the two locally acquired cases health officials completed a comprehensive patient interview and environmental assessment reinforcing rodent controls and prevention of Hanta Virus transmission to those involved.

Brucellosis

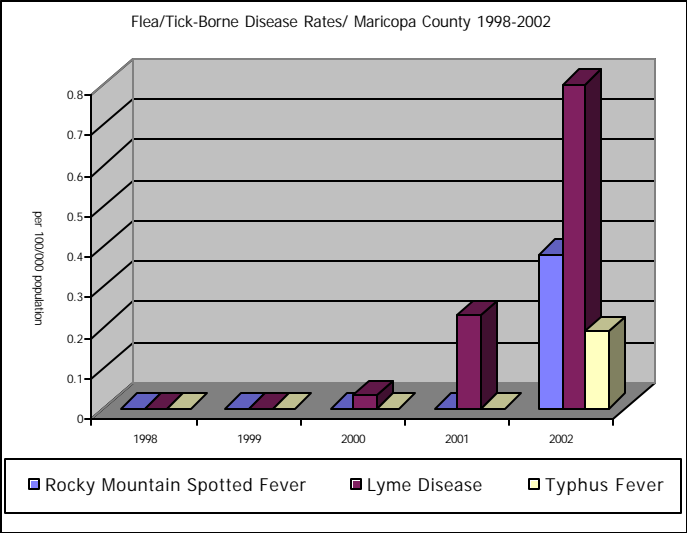
This systemic bacterial infection has a world-wide distribution and is usually associated with direct exposure to infected animals in farm settings. In Maricopa County however, cases are intermittent and more likely to be related to leisure travel to Mexico and the ingestion of unpasteurized, "home-made" dairy products from infected animals in this region. In 2002 6 cases were diagnosed and reported in Maricopa County; all but one gave such a history. Brucellosis is readily identified by isolation of the organism in blood and tissue cultures and has recently been placed on the CDC's Public Health Emergency Preparedness Response list of potential biological terrorism agents. All Brucella positive samples from local laboratories undergo confirmation and speciation at ASL. Efforts have recently been made through state border health officials to follow up cases by contacting officials across the border.



Flea/Tick Borne Diseases

Multiple cases of Rocky Mountain Spotted Fever, Typhus Fever and Lyme Disease have been reported in Maricopa County, however, these diseases are not known to be endemic to the area. Reported cases have significantly increased in the past 2 years coinciding with a state statute requiring laboratory reporting of all serological tests suggesting the presence of antibodies to infectious agents.

Definitive diagnosis of Rickettsial disease is often confounded by the lack of specificity of available serological markers. Cross-reactions between viral, autoimmune and other rickettsial diseases are common. The vague nature of symptomatology and exposure and often injudicious use of serological testing by healthcare providers add to the ambiguity of disease surveillance.

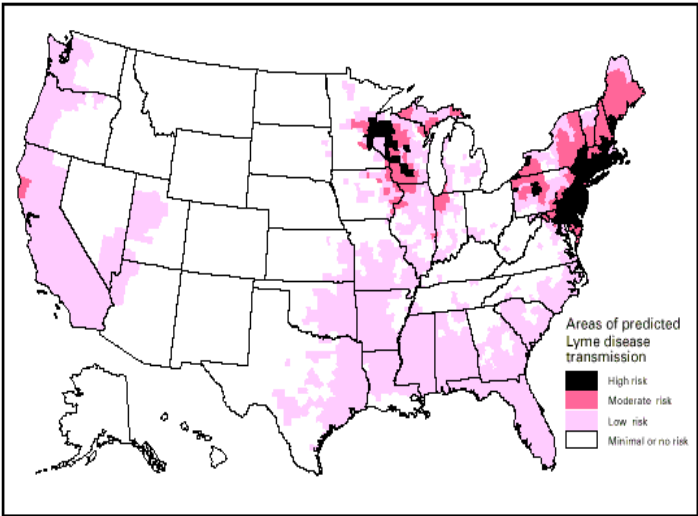


Disease	Agent	Reservoir	Vector	Incubation	Symptoms
Lyme disease	Borrelia burgdorferi	Deer, other mammals	Ixodes scapularis (tick)	3-32 days	Erythema migrans, fever, malaise, headache, myalgia, arthralgia Late: neurologic, cardiac, and rheumatologic involvement.
Rocky Mountain Spotted Fever	Rickettsia rickettsii	Dogs, rodents	Dermacentor variabilis/andersoni (tick)	3-14 days	Mod-high fever, malaise, myalgia, headache, conjunctivitis, macular rash on extremities ->palms->trunk.
Typhus Fever	Rickettsia typhi, felis	Rats, mice	Xenopsylla cheopis (flea)	6-14 days	Fever, headache, myalgia, macular papular rash.

Investigations involve examining physician notes and interviewing patients when necessary in order to determine congruence of history (travel, activities in tick/flea infested areas, season of potential exposure), symptomatology and laboratory findings.

Of the 25 Lyme Disease reports in 2002, 6 were ruled out as cases based on symptomatology and exposure history and the remaining 19 have out of state exposures. Of the 6 reported laboratory positives for Typhus Fever 5 also has positive titers for RMSF, confirming cross-reactivity and poor sensitivity of serological testing; four of the five have ruled out for both disorders another is still under investigation. Of the remaining RMSF positives reported, 2 ruled out for disease, 2 have out of state exposures and three remain in investigation. County health officials will continue to monitor these reports as they relate to the potential for emerging vector or host habitats in Maricopa County.

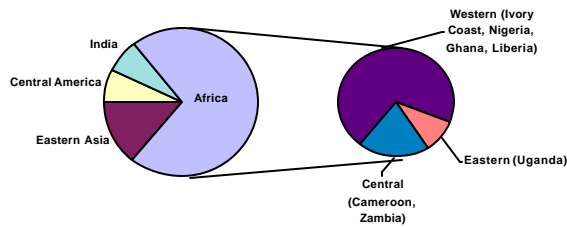
National Lyme disease risk map with four categories of risk



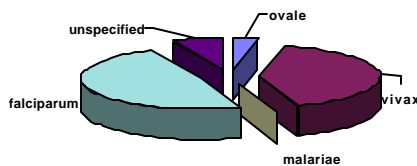
Note: This map demonstrates an approximate distribution of predicted Lyme disease risk in the United States. The true relative risk in any given county compared with other counties might differ from that shown here and might change from year to year. Risk categories are defined in the accompanying text. Information on risk distribution within states and counties is best obtained from state and local public health authorities.

Malaria

**Malaria Cases Diagnosed in Maricopa County
by Region of Transmission, 2002**



**Malaria Cases Reported in Maricopa
County by Species, 1999-2002**

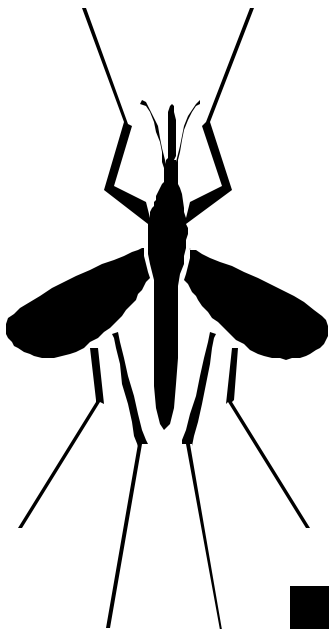


Maricopa County has had no cases of locally acquired malaria, however persons with recent travel histories to areas in which this mosquito-borne parasite is endemic are frequently diagnosed here. Case reporting has increased in the past 2 years from no reported cases in 1998 and 1999 to 14 cases each year for 2001 and 2002. Malarial disease in Maricopa County is imported primarily from Africa although other regions are also represented as depicted in the chart.

The *Plasmodium* species affecting humans are *falciparum*, *vivax*, *malariae*, and *ovale*. Chart 2 depicts the species of malaria most commonly found in Maricopa County. In 2002 all African cases except one (a New Guinea case) were *P falciparum*, the most serious of the four types. While each patient survived several *P falciparum* cases had extended hospitalizations suffering cerebral malaria, renal dysfunction and severe anemia or requiring exchange transfusions and mechanical ventilation.

New surveillance procedures in place in 2002 involve forwarding all malaria positive samples from local laboratories to the ASL. At ASL slides are photographed and sent via email to Centers for Disease Control (CDC) Division of Parasitic Disease (DPD) for confirmation. If the appearance of the smear is inconclusive the retained blood samples are sent to CDC labs for PCR or serological testing. Turnover time for these results has been as fast as a few hours and, when needed DPD experts have consulted via telephone with local physicians in determining appropriate case management.

Mosquito-Borne Viral Diseases



Viral Encephalitis

In 2002 of 83 mosquito pools tested in Maricopa one was presumptively positive for Western Equine Encephalitis (WEE) and 2 have been confirmed positive for St. Louis Encephalitis (SLE). Sentinel chicken flock seroconversions for WEE and SLE were also recorded. Two human cases of SLE encephalitis have been identified, both are still under investigation.

Dengue Fever

Of four suspected Dengue Fever cases investigated in Maricopa County in 2002 one had significantly elevated Dengue titers. The patient became ill during a trip to Thailand suffering with fever, cough and a rash. Upon return to AZ he was admitted to a local hospital with liver dysfunction, low platelets and white blood cell count. Evaluation of the test results/history by microbiologists at the Dengue Branch of CDC's Division of Vector borne Infectious Diseases division resulted in determination of "secondary Flavivirus infection" due to the Yellow Fever vaccine received by the patient before the trip as the most likely cause however, Dengue cannot be definitively ruled out.

Leptospirosis

One case of leptospirosis was reported in Maricopa County in 2002. The patient presented at a local hospital with flu symptoms and dehydration; the case had a fatal outcome. Investigation revealed the bacteria was likely to have been transmitted in Hawaii after the patient went diving in murky water on the island of Hawahu. Hawaiian health officials were notified and were apparently aware of potential for the transmission of Leptospirosis in the area.



Rabies

2002 was a record year for animal rabies detection in Arizona which recorded 143 animals testing positive for rabies; the most ever in our state. For Maricopa County 10 rabid bats resulted in 2 human, 5 dog and 2 cat exposures. Post exposure prophylaxis was given and there were no fatalities among the exposed.



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Division of Epidemiology/BDPR
Contact Numbers (all 602 area code)**

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Garrett Booth	Epidemiologist	506-3252
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Andrew Edmonds	Data Analyst	506-3252
Joesette Frausto	Administrative Assistant	506-6439
Jeanette Gibbon	Epidemiologist	506-6801
Ron Klein	Disease Surveillance Sup	506-6722
Ashraf Lasee	Epidemiologist	506-3062
Chris Mahon	Program Admin, CHN	506-6771
Yanita Moore	Data Entry Clerk	506-6805
Liva Nohre	Senior Epidemiologist	506-6826
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Sarah Santana	Director, Epidemiology	506-6952
Mare Schumacher	Deputy Director, Epi	506-3078
Heather Wanatowicz	Administrative Supervisor	506-6825
Gary West	Statistical Programmer	506-6830

To report communicable diseases, unusual health occurrences, and public health emergencies (all 602 area codes unless otherwise noted)

	Business hours M-F 8a-5p	After business hours
Bite reports	506-7387	506-2752
Communicable diseases	506-6868 or 506-6767	480-303-1100
Death certificates, funeral homes, human remains	506-6805	450-9982 or 420-2839
HIV (reports)	506-6426 or 506-6871	Not available
Public health emergencies	339-8749	480-303-1100